



CHAPTER 8. ENVIRONMENT AND SUSTAINABILITY ELEMENT

8.1 Introduction

8.1.1 PURPOSE AND INTENT

The Environment and Sustainability element prioritizes protection of sensitive areas and watershed processes in Duvall and identifies steps the City and the Duvall community should take to ensure a sustainable future that meets the needs of the present without compromising the needs of future generations. Its purpose is to accommodate population and job growth in a sustainable manner that avoids negatively impacting sensitive areas and watershed processes. The goals and policies in this element are organized by the following three themes: sustainability, natural environment, and shoreline management.

The City of Duvall had made a number of commitments to avoid or minimize environmental impact that could result from the 2015 Adoption of the Duvall Comprehensive Plan Amendments. The Final Environmental Impact Statement (Chapter 6 – Environmental Commitments) outlines the City of Duvall's commitment through mitigation measures that will be implemented through policy development and project review.

8.2 Goals and Policies

8.2.1 SUSTAINABILITY

Sustainability is simply defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs. It includes the interdependent pillars of environmental quality, economic vitality and social equity. Sustainability allows us to preserve and enhance what we have in order to plan for and achieve a livable Duvall community. Planning for sustainability requires a systematic, integrated approach that brings together environmental, economic, and social actions directed toward the following 10 goals and corresponding policies:

8.2.1.1 Healthy Community

GOAL ES 1: Preserve and revive local identity; support and participate in the arts.

Policies

- ES 1.1 Establish a voluntary program to protect properties with historic, architectural, or social significance that contribute to Duvall's identity.
- ES 1.2 Capitalize on public projects by expressing the identity and special character of Duvall through excellent urban design and architecture that:
 - a. responds to local climate conditions, respects the surrounding context, uses local building and landscaping materials, emphasizes conservation, and draws on the region's cultural heritage; and



- b. communicates the purpose of the project and the identity, history, and uniqueness of different places within the city.

ES 1.3 Sustain and enhance arts and cultural institutions for an active and vibrant community life.



- ES 1.4 Encourage establishment of live-work art studios.
- ES 1.5 Promote and fund public art and community arts groups.
- ES 1.6 Promote the creation and display of public art, especially art that reflects Duvall's community identity.
- ES 1.7 Incorporate the arts into the design of public projects and the use of public spaces.



GOAL ES 2: Have access to goods, services, employment, and housing.

Photo ES-1. Duvall Days Parade

Policies

- ES 2.1 Balance the geographic distribution of positive amenities like local businesses, recreation, and civic services.
- ES 2.2 Seek out and encourage the use of public and underutilized land, such as unused parking lots, abandoned properties, and public parks, for community gardens and open space tracts.
- ES 2.3 Adjust open space requirements for subdivisions to include provision of community gardens.
- ES 2.4 Promote gardens as a tourism draw by working with local agricultural providers.
- ES 2.5 Explore opportunities to collaborate with the Riverview School District and nonprofit organizations to better serve youth employment and housing needs.
- ES 2.6 Provide housing for seniors by creating incentives for single-story houses.
- ES 2.7 Provide housing for young adults by creating incentives for first-time home buyers.
- ES 2.8 Strive to create mixed-income neighborhoods by integrating affordable housing with market-rate housing, avoiding concentrations of below-market-rate or subsidized housing in any one area of the city.

GOAL ES 3: Encourage safe and active outdoor recreation that caters to youth, families, and seniors to promote good health and well-being.

Policies

- ES 3.1 Create incentives for developers to incorporate outdoor recreational areas into their project design.
- ES 3.2 Seek grants to improve existing Duvall parks and to construct new parks with active recreational opportunities. Active play structures and/or amenities should be designed to accommodate a range of ages and abilities.
- ES 3.3 Incorporate crime prevention through environmental design (CPTED) into the design process for public streets and parks.
- ES 3.4 Encourage and support existing and new youth programs that contain social, academic, health, and cultural programs as funding becomes available.
- ES 3.5 Encourage recreation programs to be affordable and meet the diverse needs in the community for users such as seniors, youth, disadvantaged communities, and families.
- ES 3.6 Explore regulatory or financial incentives in the zoning code and development approval process to encourage the location of private/non-profit recreation facilities (e.g., gyms, yoga or dance studios, martial arts, etc.).
- ES 3.7 Create joint-use agreements with Riverview School District to maximize community use of school facilities and expand school use of City park facilities where appropriate and community space exists to expand opportunities for physical activity.
- ES 3.8 Promote volunteer programs with local nonprofit organizations, partnership collaborations, and public schools to foster a sense of ownership and pride among residents that supports community interactions (e.g., between youth and elders).
- ES 3.9 Promote awareness of regional services for seniors (e.g., Sno-Valley Senior Center located in Carnation).



Photo ES-2. Play structure at Judd Park

8.2.1.2 Economy and Employment

GOAL ES 4: Create a prosperous and sustainable economy by expanding local businesses and job creation, creating diverse neighborhoods, and maintaining a high quality of life and natural environment.

Policies

- ES 4.1 Create a meaningful diversity of City budget sources.

- ES 4.2 Take care of assets and investments such as Main Street, existing infrastructure, and places the community values by:
- investing public and private funds in existing places adjacent to State Route 203 (SR-203);
 - encouraging private sector investment;
 - building on past community investments; and
 - fostering economic development in Old Town, Mid-town, and Big Rock Road by improving transportation connections.
- ES 4.3 Target city budget decisions to support the Riverview School District's major capital investments through complementary improvements including recreational facilities, sidewalks and safe crossings, and others that leverage limited capital funding available for schools within the city.
- ES 4.4 Provide programs or incentives that support locally owned businesses to promote a diverse local economy that serves the needs of local consumers.
- ES 4.5 Promote food security (e.g., food banks), local businesses, organic food, and public health by encouraging locally-based food production, distribution, and choice through the support of home and community gardens, farmers or public markets (e.g., Duvall Farmers Market, Figure 3), and other small-scale, collaborative initiatives.
- ES 4.6 Strengthen ties with schools, institutions, arts and cultural entities, nonprofits, and other organizations and recognize their contributions to economic diversity, living wage jobs, and economic activity in the city.
- ES 4.7 Evaluate annexation proposals based on costs to City services and avoid incorporating areas that negatively affect the City budget.



Photo ES-3. Booth at Duvall Farmers Market
Source: Duvall Farmers Market, 2015

8.2.1.3 Land Use and Community Character

GOAL ES 5: Focus growth within already urbanized areas and manage incremental growth in urban growth areas to create walkable and compact neighborhoods that maintain unique local character.

Policies

- ES 5.1 Strive to create development patterns such that the majority of residents are within one-half mile walking distance to a variety of neighborhood goods and services, including supermarkets, restaurants, religious institutions, cafes, dry cleaners, laundromats, farmers markets, banks, pharmacies, medical clinics, and other goods and services.
- ES 5.2 Regulate new development to ensure new blocks encourage walkability by maximizing connectivity and route choice and creating reasonable block lengths of 300-600 feet to encourage more walking and physical activity.
- ES 5.3 Provide a greater diversity and range of housing by location, tenure, size, amenities, type of unit, and price throughout the City to help ensure residents of all stages of life have housing opportunities.
- ES 5.4 Focus growth in areas with existing utility and transportation infrastructure, such as near transportation arterials, and maintain lower densities in neighborhoods with limited utility or transportation capacity.
- ES 5.5 Ensure growth is not disruptive of the cultural integrity of Old Town
- ES 5.6 Plan for phased growth in urban growth areas alongside utility and transportation infrastructure investments.

8.2.1.4 Transportation and Mobility

GOAL ES 6: Create a safe, clean, and integrated multimodal transportation system that supports the City's growth strategy, promotes economic and environmental vitality, and contributes to better public health.

Policies

- ES 6.1 Encourage new developments, and projects involving reconstruction or repaving of parking facilities, to provide designated and preferred parking spots with alternative fueling stations for electric cars.
- ES 6.2 Increase capacity on roadways only if needed to improve safety, improve connectivity of the transportation network, or where other measures are impractical to achieve level-of-service standards.
- ES 6.3 Avoid supporting highway expansion for the sole purpose of increasing general traffic capacity.
- ES 6.4 Encourage new developments to incorporate alleys that connect into the transportation network to serve as a valuable resource for access, location of utilities, and solid waste collection.
- ES 6.5 Maintain existing alley network.
- ES 6.6 Establish a pilot program that retrofits alleys as greenways.

- ES 6.7 Require the continuation of the street network between adjacent development projects to promote walkability and allow easier access for emergency vehicles.
- ES 6.8 Create interconnected pedestrian and bicycle facilities.
- ES 6.9 Promote safe walking, bicycling, and driving behavior through education, enforcement, and engineering design, in order to provide public health benefits and to reinforce pedestrian, bicyclist, and motorist rights and responsibilities.
- ES 6.10 Identify, evaluate, and mitigate environmental impacts of transportation investments and operating decisions (including impacts on air and water quality, regional and state air quality goals and requirements, noise, environmentally sensitive areas, and endangered species). Pursue transportation projects, programs, and investment strategies consistent with noise reduction, air quality improvement, vehicle trip reduction, protection of critical areas and endangered species, and water quality improvement objectives.
- ES 6.11 Educate residents about air quality impacts associated with vehicle usage, alternative modes of transportation, and alternative fuels.
- ES 6.12 Develop a complete streets standard that is designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit riders of all ages and abilities.

GOAL ES 7: Increase commute alternatives with multimodal transportation connections to the surrounding community and between Duvall neighborhoods, and invest in technological infrastructure to enhance telecommuting.

Policies

- ES 7.1 Work with transit providers to reestablish and improve transit service between Duvall and major employment centers. Pursue strategies that make transit safe, secure, comfortable, and affordable.
- ES 7.2 Enable universal, affordable, and reliable access to high-speed information technology (e.g., provide free WiFi in downtown).
- ES 7.3 Evaluate and improve infrastructure serving population groups with special needs to ensure they are connected to neighborhoods with safe access for pedestrians and bicyclists.
- ES 7.4 Promote investments in telecommunication infrastructure and offices that promote shared work space to reduce single occupancy car travel.
- ES 7.5 Explore alternative transportation services, including bike sharing and car sharing programs.

8.2.1.5 Natural Resources and Environmental Quality

GOAL ES 8: Reduce waste and reuse and recycle where possible.

Policies

- ES 8.1 Encourage waste reduction and cost-effective reuse and recycling by residents, businesses, and City employees through education, incentives and increased availability of recycling options.
- ES 8.2 Improve waste diversion rates in select City-owned public spaces, prioritizing community and neighborhood parks
- ES 8.3 Educate residents and businesses to divert food and yard waste from landfill through composting and other means, to decrease utility expenses, as well as to reduce fertilizer and pesticide use and greenhouse gas emissions.
- ES 8.4 Facilitate and partner with local community groups and schools on a youth-focused public education program about reducing litter and recycling strategies in the parks and in the city.
- ES 8.5 Encourage partnerships between grocery stores, restaurants, and the Riverview School District with nonprofit organizations to rescue leftover food and deliver it to nearby shelters and food pantries.
- ES 8.6 Work with community service organizations to develop events and outreach programs on reducing waste and landfill diversion approaches.

GOAL ES 9: Value and support environmental quality and support choices that minimize impacts to the environment.

Policies

- ES 9.1 Preserve and restore habitat connections and tree canopy to link stream and river corridors, landslide prone areas, floodplains, wetlands, and critical habitat sites into a system of habitat corridors. This provides connections for wildlife, supports biodiversity, improves water quality, reduces risks due to flooding and landslides, and supports Duvall's adaptation to climate change.
- ES 9.2 Encourage voluntary planning to suitable native trees and native vegetation within degraded streams, wetlands, lake buffers, and steep slopes. Create mitigation banks or voluntary programs to facilitate planting efforts.
- ES 9.3 Create a reclaimed water program that identifies funding, infrastructure improvements, and regulatory requirements to reuse water from the Duvall Wastewater Treatment Plant for landscape irrigation, sewage conveyance, and other non-potable uses.
- ES 9.4 Support and implement water conservation and reuse measures that reduce potable water use, such as: (a) public education; (b) billing rate structures which encourage conservation; (c) encouraging drought tolerant plantings and native vegetation for public and private development, and; (d) imposing water restrictions during droughts. Maintain

City membership with Saving Water Partnership to continue collaborating with local utilities on water conservation programs.

- ES 9.5 Support the use of greywater (also known as on-site water recycling) and establish criteria and standards to permit the safe and effective use of greywater.
- ES 9.6 Consider replacing the Duvall government fleet with vehicles that have a lower carbon footprint or are more fuel-efficient.
- ES 9.7 As funding becomes available, implement a program to install energy-efficient technologies for existing street and parking lot lights. Consider requiring energy-efficient technologies for new lights.
- ES 9.8 Assist and encourage new development to meet the criteria of green building certification or credentials through established programs such as Leadership in Energy & Environmental Design (LEED) and ENERGY STAR®.
- ES 9.9 Allow the incorporation of alternative energy generation (e.g., solar, wind, biomass, geothermal) in public and private development.
- ES 9.10 When reviewing applications for new subdivisions, encourage all residential buildings to optimize passive solar heating and cooling.

8.2.1.6 Climate Change

GOAL ES 10: Develop a response to the challenge of climate change (NEW).

Policies

- ES 10.1 Update and implement hazard mitigation plans to reduce and minimize, to the extent feasible, the exposure of Duvall citizens to future disasters or hazards (e.g., flooding, earthquakes, winds).
- ES 10.2 Assess the risks and potential impacts on both City government operations and on the larger Duvall community due to climate change. The assessment of risk and potential responses of adapting to climate change should evaluate the full range of issues.
- ES 10.3 Work with Seattle Public Utilities to minimize climate risks to potable water sources.
- ES 10.4 Develop strategies that can be used by both the public and private sectors to help minimize the potential impacts of climate change on new and existing development and operations. Develop programs and strategies that will encourage the retrofitting of existing development and infrastructure to adapt to the effects of climate change.
- ES 10.5 If the City is able to obtain grant money, identify programs and strategies for reducing greenhouse gas emissions over time. Sequestration should be included as a strategy.
- ES 10.6 Incorporate the impacts of development on climate change into the environmental review process.

ES 10.7 Incorporate climate change considerations into City comprehensive and operational plans.

8.2.2 NATURAL ENVIRONMENT

The City of Duvall has a beautiful natural setting, located above the Snoqualmie River and Cherry Creek valleys and surrounded by Puget Sound lowland forests to the east and south. The natural features in Duvall include sensitive areas that must be protected under state law (geologically hazardous areas, critical aquifer recharge areas, frequently flooded areas, wetlands, and fish and wildlife habitat areas) and that provide benefits to fish and wildlife, water quality, property, and quality of life. The movement of surface and subsurface water through wetlands, streams and other sensitive areas also influences water quantity, and with the proper management can limit flooding along rivers and streams, urban flooding from overflowing stormwater facilities, and stream erosion. Because of this, the City has identified a watershed management approach that is intended to ensure that future development and management of sensitive areas occurs in a way that maintains important watershed processes and functions. The goals and policies are accordingly organized by sensitive areas and watershed management. See Figures ES-1 thru ES-7 for mapped sensitive areas and watershed management subbasins.

8.2.2.1 Sensitive Areas

GENERAL

GOAL ES 11: Protect and preserve sensitive areas.

Policies

- ES 11.1 Implement and periodically update sensitive area regulations consistent with best available science while also taking into consideration Duvall's obligation to meet urban-level densities and other requirements under the Growth Management Act.
- ES 11.2 New infrastructure should be located away from sensitive areas, where feasible, or constructed to reduce or avoid impacts using non-invasive construction methods. Maintenance of existing infrastructure in sensitive areas should be subject to best management practices that minimizes impacts.
- ES 11.3 Preserve and enhance sensitive area buffers to maximize natural functions, especially when such areas have high ecological functions. Clearing, grading, and development should generally not be permitted within such buffers.
- ES 11.4 Participate in the Snoqualmie Watershed Forum and Snohomish Basin Forum and encourage development of watershed and basin policies that support the restoration of the Snoqualmie River and tributary subbasins.
- ES 11.5 Preserve and protect sensitive areas including wetlands, open space, woodlands, streams and stream corridors, steep slopes, shorelines, and other unique natural features.
- ES 11.6 Proponents of development should be required to provide mitigation proportionate and related to expected impacts of the proposed development.

- ES 11.7 New roads, utilities, and other public facilities should not be located in sensitive areas unless no other alternative is available.

GOAL ES 12: Serve as a leader in environmental stewardship of the natural environment for current and future generations.

Policies

- ES 12.1 Preserve and protect significant environmental features that reflect Duvall's natural heritage.
- ES 12.2 Encourage the implementation of appropriate natural resource projects within the park, trail and open space system such as those detailed in Habitat Assessment Existing Conditions Report (Herrera 2002), Fish Habitat Restoration Plans (Herrera 2002), and future studies.
- ES 12.3 Pursue the acquisition of additional undeveloped open space within the city and UGA, including areas located within the Snoqualmie River floodplain and other undeveloped lands that include sensitive areas and/or provide significant natural function.
- ES 12.4 Foster and promote environmental stewardship, responsibility and awareness within the city.
- ES 12.5 Maintain and, where feasible, improve environmental quality and ecosystem function to ensure the health and well-being of people, wildlife, and habitats.
- ES 12.6 Incorporate Best Management Practices (BMPs) and technology in City practices to achieve effective environmental stewardship and continual improvement in environmental management practices.
- ES 12.7 Work cooperatively with local, state, regional and federal governments and community organizations to protect and enhance the environment.

GEOLOGICALLY HAZARDOUS AREAS

GOAL ES 13: Protect people, property and the environment within geologically hazardous areas.

Policies

- ES 13.1 Sensitive areas regulations should give special protection to landslide hazard areas where mass wasting events could impact life and property or damage stream systems.
- ES 13.2 Promote soil stability through retention of existing vegetation.

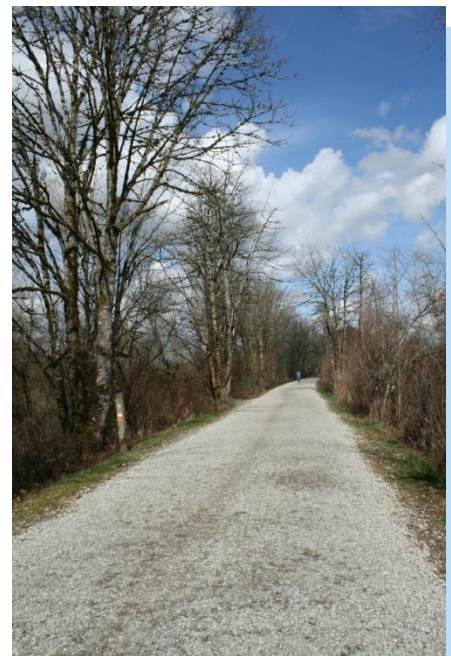


Photo ES-4. Snoqualmie Valley Trail

ES 13.3 Manage development in and near steep slope and erosion hazard areas to minimize erosion and risk to people and property.

ES 13.4 Support and promote seismic / liquefaction hazard preparedness efforts.

CRITICAL AQUIFER RECHARGE AREAS

GOAL ES 14: Protect the multiple beneficial water resource functions provided by Critical Aquifer Recharge Areas, including water quality control, water supply for human and agricultural uses, and water supply that maintains stream base flows.

Policies

ES 14.1 Protect the quality of groundwater that has been identified for potential use as a public water supply.

ES 14.2 Protect groundwater quality by utilizing the most current groundwater protection standards.

ES 14.3 Encourage retention of open space and vegetation in critical aquifer recharge areas with a high potential for groundwater recharge.

FREQUENTLY FLOODED AREAS

GOAL ES 15: Protect people, property and the environment within frequently flooded areas, including the floodplain of the Snoqualmie River.

Policies

ES 15.1 New floodplain development should generally be limited to passive park and utility uses, and should be consistent with the City's shoreline management standards.

WETLANDS

GOAL ES 16: Protect wetlands from encroachment and degradation, and promote wetland restoration, especially at sites that provide important ecological functions.

Policies

ES 16.1 Impacts to wetlands should be limited. All efforts should be made to use the following mitigation sequencing approach: avoid, minimize, rectify, reduce over time, compensate, and monitor.

ES 16.2 Preserve wetland systems by maintaining native vegetation between nearby wetlands and between wetlands and nearby streams and other wildlife habitat areas.

ES 16.3 Use multiple tools to achieve wetland protection and restoration, including property acquisition, voluntary enhancement, property developer incentives and code requirements.

- ES 16.4 Public access within wetlands and wetland buffers should be avoided whenever feasible, and when allowed, should ensure that habitat continuity, water quality, and hydrologic functions is maintained.
- ES 16.5 Prohibit stormwater management facilities within wetlands and limit such facilities within wetland buffers; ensure that wetland hydrology and water quality is maintained as adjacent development occurs.
- ES 16.6 For significantly altered or isolated wetlands with limited ecological functions, consider allowances for land development provided that adequate compensatory mitigation is provided.

FISH AND WILDLIFE HABITAT

GOAL ES 17: Maintain and protect stream resources that provide multiple functions, including surface water transport, fish and wildlife habitat, and aesthetic value.

Policies

- ES 17.1 Protect, preserve and enhance lakes, rivers and streams for their hydraulic, hydrologic, ecological and aesthetic functions.
- ES 17.2 Protect and restore riparian areas sufficient to sustain fish populations, water quality and hydrologic processes consistent with the associated stream.
- ES 17.3 Maintain and restore natural streambank conditions except where it is necessary to protect public access, critical public facilities or infrastructure.
- ES 17.4 Manage the quality and quantity of stormwater runoff entering streams, so as to protect public health and safety, surface and groundwater quality, and the ecological functions of natural drainage systems.

GOAL ES 18: Assure preservation, protection and restoration of salmon habitat to a sufficient extent and quality to support the productivity and diversity of all wild salmon stocks in the Snoqualmie River watershed at a level that will sustain fisheries as well as other salmon-related cultural and ecological values.

Policies

ES 18.1 Retain large woody debris in streams to support salmon populations and watershed processes; only removing large woody debris when it possesses a threat to public safety or public facilities.

ES 18.2 As financially feasible, eliminate man-made barriers to anadromous fish passage, prevent the construction of new barriers, and provide for transport of water, sediment and organic matter at all stream crossings.



Photo ES-5. Chinook Salmon

ES 18.3 As financially feasible, implement the projects listed in the Shoreline Restoration Plan (ESA, 2011) and the Fish Habitat Restoration Plan (Herrera Environmental Consultants, 2002).

ES 18.4 Support the continuation of the King Conservation District (KCD) assessment and apply for KCD grants for design and implementation of projects that protect, preserve or restore salmon habitat.

ES 18.5 Support the implementation of salmon recovery and habitat restoration actions as identified through the Snoqualmie Watershed Forum and the Snohomish Basin Forum as resources allow.

ES 18.6 Where bank stabilization is required, consider using bioengineering techniques that incorporate vegetation and woody debris as the primary means of stabilization. Bank armoring may be necessary at outfall locations.

ES 18.7 All streams, including the Snoqualmie River, other salmonid-bearing streams, and other non-fish bearing streams, and adjacent riparian buffers should be included as fish and wildlife habitat conservation areas.

GOAL ES 19: Protect and promote a diversity of plant and animal species and habitat in Duvall.

Policies

ES 19.1 Connect wildlife habitats within Duvall and within the region to achieve a continuous wildlife and watershed network. Habitat corridors may include preserved public or private open space, utility rights-of-ways, riparian corridors, wetland buffers or other features.

ES 19.2 Protect priority species and habitats, as listed by the Washington Department of Fish and Wildlife and the City.

- ES 19.3 Protect native plant communities by encouraging management and control of non-native invasive plants, including aquatic plants.
- ES 19.4 Promote or require the use of native plants in site landscaping and the restoration of stream banks, Lake Rasmussen, and wetlands on public and private development projects. Use of native plants should be required for all public projects.
- ES 19.5 Incorporate public facility management practices that minimize impacts to wildlife and water quality, such as limiting the use of toxic pesticides, herbicides and fertilizers, incorporating alternative pest management methods, and providing public outreach materials about best practices.
- ES 19.6 Minimize impacts from public projects, especially utility and transportation projects, on wildlife corridors and habitat connectivity.

8.2.2.2 Watershed Management

The City of Duvall developed a Watershed Plan in 2015 that evaluates watershed processes within Duvall's city limits and its UGA, as well as downstream areas (ESA, 2015). The Report was developed with funding provided by the Environmental Protection Agency through a National Estuary Program grant, and City matching dollars. Watershed processes that were evaluated focused on the movement of water through the landscape (via streams and stormwater pipes, wetlands, springs, and groundwater). The water flow processes studied included delivery, surface storage, recharge, and discharge as well as sediment delivery processes, wetland density, and forest cover. The report divides and ranks subbasins within Duvall based on the relative importance of these watershed processes to the overall watershed and on the extent of degradation these processes have sustained as a result of past human practices (e.g., converting forested lands to impervious surfaces). The subbasins are ranked according to the following five management categories (also see Figure ES-7):

Group 1 – Protect / Restore

- Applies to Snoqualmie River/Cherry Creek floodplains.
- Assigned to subbasins that are of highest importance to multiple watershed processes and are a high priority for protection and restoration.

Group 2A – Highest Conservation

- Applies to six subbasins along east and south edges of the city.
- Assigned to subbasins that are the highest priority for conservation and are likely not appropriate for much additional development. Assessment results show moderate importance to multiple watershed processes that are also highly intact.

Group 2B – Moderate Conservation

- Applies to Cherry Creek B and Upper Weis Creek subbasins.
- Assigned to subbasins that may be appropriate for some additional development, but also require protection of areas important for remaining watershed processes.

Group 2C – Lowest Conservation

- Applies to three subbasins including North urban growth area and southeast City / South urban growth area.
- Assigned to subbasins where more intense development is appropriate. The remaining resources and areas important to watershed processes would benefit from protection.

Group 3 – Urban Development

- Applies to four subbasins in historic downtown Duvall.
- Assigned to subbasins where more intense development should be focused. These subbasins are below average for water flow importance and have the highest existing degradation.

Goals and policies identified below are included in the Watershed Plan adopted in 2015.

GOAL ES 20: Improve important watershed processes and functions through progressive review and updates of land use designations, development practices, and infrastructure improvements.

Policies

- ES 20.1 Improve protections of watershed processes by amending zoning and subdivision regulations, sensitive area protections, and storm drainage standards that are appropriate for each Management Group. Standards should afford more protection for subbasins that are important for watershed processes and allow for higher intensity development in subbasins of lower importance.
- ES 20.2 Update zoning, subdivision, sensitive areas, and storm drainage standards and other development standards consistent with the subbasin management group framework established in the Watershed Plan.
- ES 20.3 Work with King County to designate urban growth areas to exclude subbasins in the Management Group 2A and include subbasins in the Management Groups 2B and 2C, where feasible.
- ES 20.4 Consider the findings of the Watershed Plan when designating urban growth areas and urban growth area reserves with Comprehensive Plan designations and zoning districts.
- ES 20.5 Minimize impervious surfaces associated with off-street parking lots, driveways, and subdivision designs.

GOAL ES 21: Improve watershed processes by investing in stormwater infrastructure, parks, open spaces, and restoration in the City's capital improvement program.

Policies

- ES 21.1 Use the findings of the Watershed Plan to identify and prioritize park improvements that achieve multiple benefits (e.g., restore wetlands and create a trail network).
- ES 21.2 Partner with King County to leverage their expertise and resources to implement subbasin management priorities and objectives identified in the Watershed Plan for areas outside the city limits.

- ES 21.3 Partner with conservation groups, other government agencies, not-for-profit organizations, businesses, and other partners to restore habitat and watershed processes within the city limits.
- ES 21.4 Identify and prioritize stormwater retrofits to address impaired watershed processes and reduce effective impervious surface areas based on the findings of the Watershed Plan.
- ES 21.5 Explore the feasibility of building and maintaining centralized stormwater facilities in Management Groups 2B and 2C in the urban growth area to offset onsite detention requirements.
- ES 21.6 Identify and target grant monies and other funding sources for restoration that addresses protection and restoration of watershed processes in Management Groups 1, 2A, and 2B. Consult the Duvall Shoreline Master Program Restoration Plan to identify restoration priorities in Management Group 1.
- ES 21.7 Work with private property owners to voluntarily establish conservation easements on lands with intact forest cover or high value natural resources, especially land that is prioritized for protection or restoration by existing City plans (for example, Duvall's Shoreline Master Program Restoration Plan) in Management Groups 1, 2A, and 2B.

GOAL ES 22: Preserve and enhance Duvall's tree canopy cover through education and outreach, partnerships, and pragmatic implementation strategies.

Policies

- ES 22.1 Create an urban forestry plan that documents existing conditions, identifies incentives and programs, and recommends revisions to code requirements to protect and increase forest cover.
- ES 22.2 Partner with nonprofit organizations to promote a voluntary tree planting program that provides Duvall's residents and businesses with opportunities to plant trees in the street right-of-way planter strip and on private property. Outreach and education should be a component of this program.
- ES 22.3 Information about King County's Public Benefit Rating System, a tax reduction program, should be shared with Duvall property owners located in Management Groups 2A, 2B, and 2C to encourage conservation of forested properties.

- ES 22.4 Promote conservation of healthy, native forests in large tracts as part of new subdivision development in Management Groups 2A, 2B, and 2C.
- ES 22.5 Amend the significant tree requirements to increase the percentage of trees preserved at the time properties develop and to require preservation of stands of trees. Trees to be saved should be in locations and of a species type to allow maximum opportunity for retention.



Photo ES-6. View of forested hillside

- ES 22.6 Expand tree mitigation standards in Chapter 14.40 of the Duvall Municipal Code to include standards on tree type, location, and monitoring.
- ES 22.7 Create a landmark heritage tree program that establishes criteria for nominating and recognizing trees of exceptional value.

GOAL ES 23: Improve city-wide stormwater systems to maintain and enhance water flow and water quality processes through implementation of low impact development techniques.

Policies

- ES 23.1 Improve stormwater management based on the findings of the Watershed Plan by expanding low impact development requirements, creating incentives, and establishing green infrastructure standards for public roadways in the Duvall Municipal Code.
- ES 23.2 Encourage property owners to use low impact development best management practices for improved stormwater systems by establishing voluntary programs, and partnering with not-for-profit organizations and governmental agencies.
- ES 23.3 Create an educational outreach program that includes workshops, informational handouts, and links to additional resources on amended soils, rain gardens, native landscaping and rainwater harvesting, landscaping management best practices, and environmental stewardship for property owners.

GOAL ES 24: Improve long-term management of sensitive areas by updating standards that address watershed processes into the City's Sensitive Areas Ordinance.

Policies

- ES 24.1 Identify, designate, and protect habitat corridors between streams, wetlands, and geologic hazard areas within city limits, including linkages to areas outside of city limits.

- ES 24.2 Restrict wetland and stream buffer reduction allowances in the Duvall Municipal Code for Management Groups 1 and 2.
- ES 24.3 Increase regulatory protections for depressional wetlands in Management Groups 1 and 2.
- ES 24.4 Incorporate standards in the Sensitive Areas Ordinance that limit modifications to wetland and stream buffers that would result in tree loss.

GOAL ES 25: Avoid mass clearing and grading associated with new developments that result in large amounts of tree loss and changes in topography.

Policies

- ES 25.1 Strengthen the limitations on clearing mature or native vegetation in Management Groups 1 and 2 as new development occurs by more closely integrating open space subdivision standards with sensitive area standards.
- ES 25.2 Limit extensive grading and retaining walls for large subdivisions in Management Groups 1 and 2.

8.2.3 SHORELINE MANAGEMENT

The goals and policies identified below are included in the City of Duvall's Shoreline Master Program, adopted in 2015. The Shoreline Master Program is a planning document that applies only to the Snoqualmie River and its floodplain and associated wetlands.

8.2.3.1 Shoreline Goals

Goal ES 26 (Economic Development): Promote healthy, orderly economic growth by encouraging economic activities that will be an asset to the local economy, which result in commercial uses that are compatible with the intent of the Act and the City, and which maintain the shoreline ecological functions.

Goal ES 27 (Public Access / Recreation): Provide opportunities for new and enhanced physical and visual public access to and water-oriented recreational opportunities within the City's shorelines when such access and/or recreation can be reasonably accommodated without human health or safety risks, without adverse effects on shoreline functions, and consistent with private property rights.

Goal ES 28 (Shoreline Use): Ensure that the land use patterns in the shorelines protect the existing character of the City and protect existing shoreline environments, habitats, and ecological functions.

Goal ES 29 (Conservation and Restoration): Preserve and protect ecological functions and processes necessary to maintain shoreline natural resources, protect public health and safety, and preserve beneficial uses of the shoreline; restore and enhance identified degraded ecological functions and processes over time.

Goal ES 30 (Archaeological, Historical, Cultural, Scientific and Educational Resources): Identify, protect, preserve and restore important archeological, historic, cultural sites

located in shoreline areas for educational and scientific values and enjoyment of the general public.

Goal ES 31 (Flood Hazard Management): Protect shoreline resources and shoreline development and ensure public safety through land use controls and implementation of federal, state and local flood hazard programs.

8.2.3.2 General Shoreline Use Policies

SHORELINE USE

- ES 31.1 Water-dependent uses that preserve shoreline ecological functions and processes are preferred shoreline uses. Secondary preference is given to water-related and water-enjoyment uses, and to those uses that enhance public access to the shoreline or include elements of shoreline restoration.
- ES 31.2 The design, density and location of all allowed uses and developments should reflect physical and natural features of the shoreline and should assure no net loss of ecological functions by avoiding and minimizing adverse effects on shoreline ecology.
- ES 31.3 Uses and development which include restoration of shoreline areas that have been degraded as a result of past activities is highly encouraged.

MAINTENANCE OF EXISTING PUBLIC RECREATION AND UTILITY USES AND STRUCTURES

- ES 31.4 Normal and routine maintenance activities for public recreation and utility uses and structures should not qualify as development and should not require a shoreline substantial development permit whenever such normal and routine maintenance is exempt from requiring a shoreline substantial development permit compliant with Section 7.3 of this Program and WAC 173-27-040 (List of Exemptions).
- ES 31.5 Normal and routine maintenance activities should be completed consistent with the policies and standards of this Program.

ARCHEOLOGICAL, HISTORICAL AND CULTURAL RESOURCES

- ES 31.6 The location of cultural and archeological sites should not be disclosed to the general public, consistent with applicable state and federal laws.
- ES 31.7 Development on sites having or adjacent to historical, cultural and archeological resources should avoid and minimize impacts to the resource. The City should endeavor to involve tribal governments and the State Department of Archaeology and Historic Preservation in the review of development projects that could adversely affect such resources.
- ES 31.8 The City should encourage educational projects and programs that foster a greater appreciation of the importance of shoreline management, local history, and environmental conservation.

ENVIRONMENTAL PROTECTION AND SENSITIVE AREAS

- ES 31.9 The City should preserve, enhance, and/or protect sensitive areas in shoreline jurisdiction for their ecological functions and values, as well as their aesthetic, scenic, and educational qualities.
- ES 31.10 Development should provide a level of protection to sensitive areas within the shoreline that achieves no net loss of ecological functions, with project specific and cumulative impacts considered in assessing the potential for net loss of ecological functions.
- ES 31.11 This program should ensure that the City's shoreline ecological functions are maintained or improved in the long term through effective implementation of the City's Sensitive Areas Code.
- ES 31.12 Proponents of development should require mitigation proportionate and related to the expected impacts of the proposed development.

FLOOD HAZARD REDUCTION

- ES 31.13 Flood protection should be managed in accordance with the City's floodplains regulations, Stormwater Management and Erosion Control regulations, and the National Flood Insurance Program.
- ES 31.14 The City should participate in regional approaches to flood management issues within the Snoqualmie Watershed, coordinating with the Federal Emergency Management Agency, the State of Washington, King County, and other entities involved in reducing flood hazards.
- ES 31.15 Consistent with the City's floodplain regulations, DMC Title 14, the City should discourage development in floodplains and channel migration zones associated with the City's shorelines that would individually or cumulatively result in an increased risk of flood damage, channel erosion hazards, or further limit channel migration.
- ES 31.16 Non-structural flood hazard reduction measures should be given preference over structural measures. Non-structural measures include setbacks, land use controls prohibiting or limiting development in historically flooded area, removal or relocation of structures in flood-prone areas, or bioengineering measures. Structural flood hazard reduction measures should be avoided whenever possible, and when necessary should be conducted in a manner that assures no net loss of ecological functions and ecosystem-wide processes.
- ES 31.17 The City should not allow new uses, the creation of new lots, or the construction of new developments where the development or use would further require structural flood hazard reduction measures in the reasonably foreseeable future.

PUBLIC ACCESS

- ES 31.18 The City should expand the amount and diversity of shoreline public access opportunities consistent with the character and ecological functions of the shoreline, private property rights and public safety. Specifically, expand a network of walking and biking trails along the Snoqualmie River throughout shoreline jurisdiction and maintain and improve

existing water-dependent shoreline access opportunities in the North McCormick Park Public Recreation and Taylor's Landing Public Recreation environments.

- ES 31.19 The City should ensure that public access improvements and amenities (such as viewpoints, trails, etc.) be designed to provide for public safety, to respect individual privacy, and to avoid or minimize visual impacts from neighboring properties.



Photo ES-7. Entrance to McCormick Park

- ES 31.20 The City should ensure that public access is provided as part of any development project by a public entity except when such access is shown to be inappropriate due to reasons of safety, security, or adverse impacts to shoreline functions and processes.
- ES 31.21 The City should encourage commercial, multi-family residential, and mixed-use developments to provide public physical or visual access to the shoreline as a condition of approval for development within the City's shoreline. Public access should be commensurate with the impacts of such development and the corresponding benefit, and should be balanced with the need to protect ecological functions and preserve the rights of private property owners.

SHORELINE VEGETATION CONSERVATION

- ES 31.22 All new shoreline development and/or uses should retain existing native shoreline buffer vegetation, with the overall purpose of protecting and maintaining functions and processes. Important functions of shoreline buffer vegetation include: stabilizing banks and attenuating erosion, providing shade to maintain cool temperatures, removing sediments and excessive nutrients, providing habitat for terrestrial and aquatic wildlife, and providing woody debris and other organic material inputs.
- ES 31.23 Vegetation conservation and management in shoreline areas should include removal of non-native invasive plant species and noxious weeds as needed to facilitate establishment of stable native plant communities.
- ES 31.24 Woody debris should be left in stream corridors to enhance wildlife habitat and shoreline ecological functions, except where it threatens personal safety or public infrastructure such as bridge pilings, roads or flood control structures.

ES 31.25 Native shoreline vegetation should be integrated with bioengineering to stabilize streambanks and minimize erosion.

ES 31.26 Vegetation clearing should be limited to the minimum necessary to accommodate shoreline uses/development.

WATER QUALITY

ES 31.27 Stormwater should be managed consistent with DMC 9.06, the City's stormwater management and erosion control regulations and the Comprehensive Plan.

ES 31.28 Promote the use of low impact development techniques through incentives, permit requirements, and adopted City plans and policies.

ES 31.29 Effective erosion/sedimentation controls for construction in shoreline areas should be required.

ES 31.30 The City should discourage the use of fertilizers and herbicides adjacent to shorelines.

RESTORATION

ES 31.31 The City should encourage and facilitate cooperative restoration and enhancement programs between local, state and federal public agencies, tribes, non-profit organizations, and landowners.

ES 31.32 The City should implement approved restoration plans to facilitate the restoration of impaired ecological functions through a variety of techniques, including seeking restoration partners, incentives for projects that incorporate restoration components, and securing available restoration grants and funding.

ES 31.33 The City should establish a public outreach and education program for property owners adjacent to the shoreline to promote shoreline-friendly practices.

VIEWS AND AESTHETICS

ES 31.34 Shoreline uses and development should be designed and maintained to minimize obstructions of the public's views of the water, including considerations of scale, arrangement, and modulation of site buildings and elements.

8.2.3.3 Shoreline Modification Policies

SHORELINE STABILIZATION

ES 31.35 New permanent shoreline stabilization structures should be prohibited except in cases where an existing structure or public use is in imminent danger from water induced erosion and where associated with public recreational access facilities.

ES 31.36 Where allowed, stabilization measures should use non-structural shoreline stabilization or biostabilization techniques.

- ES 31.37 Proposals to repair existing shoreline stabilization structures should include measures to enhance existing conditions for fish and wildlife, shoreline vegetation, water quality, and sediment transport.
- ES 31.38 Unless permitted by this Program as water-oriented, all new shoreline uses and developments should be located and designed to prevent the need for structural shoreline stabilization (bulkheads, riprap, etc.). The City should not allow new non water-oriented uses, the creation of new lots or the construction of new non water-oriented development where it would be reasonably foreseeable that the development or use would require structural bank stabilization.

FILL, EXCAVATION, DITCHING, CLEARING AND GRADING

- ES 31.39 Fill, excavation, ditching, clearing and grading in shoreline jurisdiction should be allowed only in association with a permitted use and where allowed should be the minimum necessary to accommodate the proposed use.
- ES 31.40 Shoreline fill, excavation, ditching, clearing and grading should be designed and located so there will be no significant degradation of water quality, no alteration of surface water drainage, flood water storage, or conveyance capacity and no further limitation to channel migration which would pose a hazard to adjacent property or natural resources.

DREDGING AND DREDGE MATERIAL DISPOSAL

- ES 31.41 Dredging and dredge material disposal should be prohibited except when associated with an approved and adopted watershed management plan, surface water management plan, restoration plan, and/or flood hazard reduction plan.

IN-STREAM STRUCTURES

- ES 31.42 In-stream structures should only be allowed for the purpose of environmental restoration and should provide for the protection and preservation of ecological functions and processes such as fish habitat.
- ES 31.43 Existing in-stream structures which are failing, unnecessary, harmful, or ineffective should be removed, and shoreline ecological functions and processes should be restored using non-structural methods.
- ES 31.44 Natural in-stream features such as large woody debris, snags, uprooted trees or stumps should be left in place unless it can be demonstrated that they are causing bank erosion, higher flood stages or safety hazards.

8.2.3.4 Use Specific Policies

BOATING FACILITIES

- ES 31.45 New public hand-launch boat launch ramps should be permitted in the Duvall shoreline. If allowed, such facilities should be designed to accommodate public access and enjoyment of the shoreline location. Depending on the scale of the facility, public access should include walkways, viewpoints, and other recreational uses.

- ES 31.46 Trailer-launch boat launch ramp should be maintained as a permitted use in the Duvall shoreline at Taylor's Landing. If redevelopment of the Taylor's Landing boat launch is proposed and approved, such facilities should be designed to accommodate public access and enjoyment of the shoreline location. Depending on the scale of the facility, public access should include walkways, viewpoints, and other recreational uses.



Photo ES-8. Taylor's Landing boat launch

- ES 31.47 Marinas, docks, piers, wet boat storage and private boat launch ramps should be prohibited within Duvall shoreline jurisdiction due to the specific nature and configuration of the Snoqualmie River shoreline in the City.
- ES 31.48 Locate, design, and operate public boat launch ramps to avoid adverse proximity impacts to adjacent land uses such as noise, light and glare, aesthetic impacts, and impacts to public visual access.
- ES 31.49 Dry boat storage should not be considered a water-oriented use and should only be allowed within the shoreline environment when approved through a conditional use permit, and only when providing public storage in the North McCormick Park shoreline environment for hand launch-able boats.

COMMERCIAL

- ES 31.50 Commercial development and use should be prohibited except within the Riverside Village environment, and within the South McCormick Park Passive Recreation and Conservancy and North McCormick Park Public Recreation environments when associated with commercial uses fronting Main Street.
- ES 31.51 Where permitted, the City should give first preference to water-dependent commercial uses over non-water-dependent commercial uses (where appropriate); and give second preference to water-related and water-enjoyment commercial.
- ES 31.52 Commercial development should be designed and located to prevent net loss of shoreline ecological functions and should not have adverse impacts on other shoreline uses, public access or recreation.

INDUSTRIAL

- ES 31.53 Industrial development and use should be prohibited except when associated with industrial uses fronting Main Street within the South McCormick Park Passive Recreation and Conservancy environment.

- ES 31.54 Industrial development should be designed and located to prevent net loss of shoreline ecological functions and should not have adverse impacts on other shoreline uses, public access or recreation.

RECREATION

- ES 31.55 The City should provide diverse water-oriented recreation opportunities that are convenient and adequate for the community and that preserve shoreline resources and do not result in a net loss of ecological functions.
- ES 31.56 The City should plan for shoreline recreation facilities to serve projected growth and level of service standards, in accordance with the Comprehensive Plan.
- ES 31.57 Recreational uses in shoreline areas should be located where the uses would not result in adverse effects on shoreline functions and processes, and/or neighboring uses.
- ES 31.58 The City should encourage cooperation among public agencies, Tribes, non-profit groups and private landowners and developers to increase and diversify recreational opportunities.

RESIDENTIAL

- ES 31.59 Existing single-family residences and their appurtenant structures should be permitted to continue use in the RV environment; and regulated in all other environments consistent with DMC Title 14 (Unified Development Regulations).
- ES 31.60 Residential development should be designed to preserve existing shoreline vegetation, control erosion, protect water quality using best management practices, and to use low impact development techniques where appropriate.

TRANSPORTATION AND PARKING

- ES 31.61 Transportation facilities, including new facilities and repair and improvement of existing facilities should be located, designed, constructed and maintained to have minimum impacts on shoreline resources and ensure no net loss of shoreline ecological functions.
- ES 31.62 New transportation facilities should be located outside of shoreline jurisdiction unless there is no reasonably feasible alternative alignment or location or they are required to access a permitted use and then, they should be the minimum width possible.
- ES 31.63 New transportation facilities should be located and designed to minimize the need for shoreline protection measures, modifications to natural drainage systems, and crossing waterways.
- ES 31.64 Shoreline restoration and public access should be considered with planning and funding of transportation projects.
- ES 31.65 Parking is not a preferred shoreline use and should be allowed only to support a use authorized under this Program; parking supporting a use authorized under this Program should be sited outside of Shoreline Jurisdiction or as far landward from the OHWM of the Snoqualmie River as is feasible.

UTILITIES

- ES 31.66 The design and location of utility facilities should provide for no net loss of shoreline ecological functions.
- ES 31.67 New utility production and processing facilities, such as power plants and sewage treatment plants or parts of such facilities that are non-water oriented should not be located in shoreline areas unless there is no feasible alternative location.
- ES 31.68 Utility transmission facilities should be located outside of shoreline areas, to the maximum extent feasible.
- ES 31.69 Utility installation or maintenance projects in shorelines should restore areas to pre-project configuration, replant with native species and provide maintenance care until the newly planted vegetation is established.
- ES 31.70 Maintenance, repair, and reconstruction of existing utility infrastructure should be allowed when consistent with best management practices to minimize impacts to ecological functions and restore areas of temporary impact.

8.3 Environment and Sustainability Analysis

8.3.1 SUSTAINABILITY

8.3.1.1 Existing Conditions

In order to transform the city into a sustainable environment, a firm knowledge of the current setting will provide an invaluable baseline to measure progress and determine strengths and weaknesses of the existing environment. The following topics outline the existing conditions for Duvall, and reflect the current sustainable environment. The data and detailed analysis supporting this section of the Element can be found in the existing conditions report prepared as part of the 2015 Comprehensive Plan Update.

Socio-Cultural Context: The socio-cultural context of Duvall addresses age, ethnicity, housing tenure, educational attainment, and social services. Community culture and social dynamics can play a pivotal role in the health of a community, based on social bonds, cultural understanding, and community strength. The 2010 population of Duvall was 6,695 residents. Approximately 33.8 percent of Duvall's population consists of children under the age of 18, while only 4.5 percent includes older adults over the age of 65. Racial and ethnic minorities make up 10.3 percent of Duvall's population, and 5 percent of the population is low income. Approximately 9.8 percent of the population is considered to be potentially isolated due to speaking a language other than English, while 0.7 percent is potentially isolated due to having no vehicles available. Of the 2,157 housing units, only 14.7 percent are renter occupied.

Community Health Status: The community health status provides current information on obesity, insurance coverage, diseases, mortality rates, physical activity, and health habits. In the Snoqualmie Valley (including Duvall in addition to Carnation and several unincorporated communities), general health status is very good relative to the rest of King County. Exceptions include excessive alcohol consumption (20 percent of Snoqualmie Valley residents), high blood cholesterol (43 percent), and asthma (9 percent). The Snoqualmie Valley is also above average among King County communities for

falls, with 11.2 mortality incidents per 100,000 people. Approximately 93.5 percent of Duvall residents have health insurance coverage. Average emergency response times are 3.5 to 6 minutes (including travel time) for EMS and fire in Duvall. From 2007 through 2014, there were a total of 278 reported auto accidents on public roads within Duvall, an average of just over 37.5 per year. There were only three car accidents involving pedestrians and only two involving bicycles.

Built Environment: The existing built environment includes information on population density, land use, urban infill, park level of service, housing, homelessness, walkability, and circulation. The built environment of a city can determine accessibility to services, jobs, and commercial land uses, and can hinder or help residents live active lifestyles. The majority of Duvall is designated residential in the City's Comprehensive Plan. Mixed use, commercial, and light industrial areas are mainly concentrated along Main Street, NE Big Rock Road, and NE 143rd Place, while public facilities are dispersed throughout the city. The majority of houses in Duvall are single-family residential, generally built 14 to 24 years ago, and owner-occupied. Residents and workers can use two bus routes running through the City boundaries. The most used mode of transportation employed in the city is the personal motor vehicle utilized for commuting to work, with 76.8 percent of residents driving alone. Approximately 3.8 percent of residents commute to work via public transportation.

Economic Prosperity and Access to Goods and Services: Duvall's unemployment rate in 2012 was 5.4 percent, lower than King County's average of 7.3 percent. However, access to jobs could be improved in Duvall because most people must leave the city to get to their jobs, and most are driving alone. Approximately 33 percent of households that own their home and 30 percent that rent their home are considered cost-burdened, which means that they pay more than 30 percent of their income towards their mortgage or rent. There is very limited access to amenities and services for residential neighborhoods in the southeast part of the city. Access to healthy foods is provided by the Duvall Farmers Market and 3 supermarket groceries that provide fresh produce. Access to fast foods is present, with 4 fast food restaurants and 1 convenience store.

Sustainable Natural Environment: The existing natural environment of Duvall includes air quality, water quality, land cover, habitat, and hazardous materials. Air quality in Duvall is generally consistent with other areas across the Puget Sound region. Between 1992 and 2011, Duvall saw a 26 percent reduction in forested lands as well as a 26 percent reduction in grasslands. Over that same period, developed land expanded by 34 percent and bare land by 125 percent. Loss of important natural areas throughout Duvall has resulted in impaired physical and chemical properties of natural water bodies, including known problems with bacteria on the Snoqualmie River and temperature issues on Coe-Clemons Creek. The Snoqualmie River in the vicinity of the city supports several salmonid species, including federally listed threatened Chinook salmon, bull trout, and steelhead. Areas along the western edge of the city near the Snoqualmie River, its adjacent floodplain, and wetland and riparian zones are mapped as priority wildlife habits by Washington Fish and Wildlife Habitat. There is only one known toxic cleanup site in Duvall: a gas station site on Main Street contaminated by a leaking underground storage tank.

Climate Change: Several recent studies have concluded that rising levels of greenhouse gases in the atmosphere (carbon dioxide, methane, and nitrous oxide) have warmed the earth. These studies also conclude that increases in greenhouse gases are causing rising sea levels; melting snow and ice; and more extreme storms, rainfall, and floods. Studies completed by the University of Washington Climate Impacts Group and by King County evaluate potential impacts in the Puget Sound region and predict wetter winters, increased winter stream flows, decreased snow cover and snowpack, earlier snowmelt,

and decreased summer stream flows. At the local level, increases in extreme rain events means a potential increase in Snoqualmie River flooding, flooding and erosion in smaller streams, and increased urban flooding due to undersized pipes and ditches. Reduced summer stream flows and corresponding lower groundwater elevations have the potential to affect local agriculture and river recreation. Reduced snowpack, predicted by both Climate Impacts Group and King County, has the potential to impact the City's drinking water supply. The City gets its water from Seattle Public Utilities via the Tolt River system, which relies in part on snowpack to fill the reservoir during summer months.

Through this understanding of the existing conditions in Duvall, the City has facilitated the planning process to identify needs and form policies and implementation strategies that can improve sustainability in Duvall. The existing conditions will also serve as the baseline for any implementation monitoring, and can better serve future planning processes with effective strategies for maintaining and improving a sustainable community.



Photo ES-9. Snoqualmie River viewed from McCormick Park

8.3.1.2 Implementation and Next Steps

After establishing the policy framework for moving Duvall toward a more sustainable community, the next step the City could take would be to identify actions that implement the policies identified in this element. These actions can be developed as part of a sustainability strategy or a climate action plan. The actions would need to be implemented and tracked to ensure progress towards established goals. There are many resources the City could rely on for assistance in implementation, including the King County-Cities Climate Collaboration where 11 cities and the County have partnered to coordinate and increase the effectiveness of local government on climate and sustainability actions. This partnership is open to all King County cities. Duvall could also enlist the services of ICLEI USA to create a greenhouse gas emission inventory that identifies emissions associated with the municipal government and the Duvall community. This would establish a baseline of greenhouse gas emissions by which Duvall could work towards reducing over a certain time period. The City could also employ the STAR Community Rating System which is a national certification program that assess a community's sustainability, sets targets for moving forward, and measures progress along the way.

8.3.2 ENVIRONMENTAL SETTING

8.3.2.1 Natural Environment

The City of Duvall is located on west- and north-facing hillsides in the lower Snoqualmie River valley. The centerline of the river is the approximate western boundary of the city. The northern boundary of the City extends along forested slopes near the edge of the Cherry Creek valley, a major tributary to the Snoqualmie River. Unincorporated areas of King County surround the city on all sides, with floodplain

agricultural lands of the Snoqualmie River and Cherry Creek valleys to the north and west and rural residential and forested lands to the south and east.

Duvall and surrounding areas have a temperate, maritime climate. Winters are cool and wet, while there is typically a drought period in the summer and early fall. The climate is influenced by Puget Sound to the west and the Cascade Mountains to the east. Average annual precipitation ranges from approximately 30 inches near Puget Sound to 90 inches in the Cascade foothills, with the area surrounding Duvall averaging nearly 50 inches.

The Snoqualmie River watershed and the entire WRIA 7 area support a variety of fish and wildlife species. Wildlife habitat types that are common in the vicinity include freshwater aquatic areas, including lakes, streams and wetlands; riparian habitats associated with aquatic areas; lowland conifer-hardwood mixed forests; and agricultural and pasture areas. Within Duvall, riparian and floodplain areas along the Snoqualmie River are protected as City parks and open spaces. Additional remaining natural habitats are associated with tributary stream corridors and associated wetlands, as well as steep slope forested areas occurring along the northern edge of the city.

The Snoqualmie River watershed supports Chinook, chum, coho, and pink salmon; bull trout and Dolly Varden; cutthroat, steelhead, rainbow, and brook trout; and warmwater fish such as smallmouth and largemouth bass, yellow perch, bluegill, and green sunfish (City of Duvall, 2006). All of these species use the mainstem Snoqualmie River at the city's western edge at some point in their life histories, and salmonid use is also abundant in the mainstem and tributaries of Cherry Creek. Coho and steelhead use the lower reaches of tributary streams extending into Duvall, including Cherry Creek Tributary A, Coe-Clemmons Creek, Thayer Creek, and reaches of Weiss Creek and other Cherry Creek tributaries downstream of the city.

Degradation of the natural environment is linked to changes in land use and increases in impervious surfaces and alterations to natural surface- and ground-water flow pathways associated with urban development. In Duvall, this has meant tributary streams (Thayer, Coe-Clemmons, and Cherry Creek tributaries) with deeply incised channels and bank failures caused by altered runoff patterns, as well as fill and alteration of wetlands (which serve as natural storage areas for stormwater flows) due to decreases in forest cover, increases in impervious surface and alteration of native soils. Forest cover across the city – measured at approximately 35 percent through interpretation of aerial photography – remains relatively high compared to other Puget Sound cities. Impervious surface coverage is approximately 26 across the City. As future development occurs, loss of forest cover and increases in impervious surface coverage could result in further degradation of Duvall's natural environment.

8.3.2.2 Snoqualmie River

The Snoqualmie River in Duvall is governed by Washington's Shoreline Management Act which was passed by the State Legislature in 1971 and adopted by the public in a referendum. The Act was created in response to a growing concern among residents of the state that serious and permanent damage was being done to shorelines by unplanned and uncoordinated development. The goal of the Act is "to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." While protecting shoreline resources by regulating development, the Act is also intended to provide for appropriate shoreline use by encouraging land uses that enhance and conserve shoreline functions and values.

The Act has three broad policies:

1. Encourage water-dependent and water-oriented uses: "uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the states' shorelines...."
2. Promote public access: "the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally."
3. Protect shoreline natural resources, including "...the land and its vegetation and wildlife, and the water of the state and their aquatic life...."

The Act requires local jurisdictions like the City of Duvall to develop a Shoreline Master Program to make sure the City is adequately planning for the Snoqualmie River and implementing land use regulations in accordance with the policies adopted by the State. The City adopted a Shoreline Master Program in 1974 which was subsequently updated in 2015. The 2015 Shoreline Master Program includes the goals and policies listed in this element as well as regulations that govern land uses (e.g., parks) and modifications to the Snoqualmie River (e.g., armoring). The Duvall Shoreline Master Program only applies to the Snoqualmie River which forms the western boundary of the city and "shoreland" areas lying upland of the river as depicted on Figure ES-8. The shoreland includes the floodplain associated with the river, as well as associated wetlands.

The Shoreline Master Program also created a system of "shoreline environment designations" to group areas along the Snoqualmie River that share similar characteristics so they can be managed in a uniform and consistent manner (Figure ES-8). Shoreline environment designations function similarly to zoning overlays. That is, they do not change the underlying zoning or other applicable land use regulations, but provide an additional layer of policies and regulations that can be tailored to the designation. The following shoreline environment designations have been established in the Shoreline Master Program:

1. South McCormick Park Passive Recreation and Conservancy
2. North McCormick Public Recreation
3. Riverside Village
4. Taylor's Landing Public Recreation
5. Aquatic

